The Signature Center Initiative for the Cure of Glioblastoma

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Glioblastoma multiforme (GBM, World Health Organization/WHO grade IV) is the most common form of brain cancer in the central nervous system. Although conventional treatment-surgery, radiation, and temozolomide-is somewhat effective in adults, overall survival is still < 15 months. In pediatric patients, morbidity due to GBM is the highest among all pediatric cancers. In the context of brain cancers, new and existing therapeutics typically fail due to heterogeneity of genetic mutations within tumors, and because biologically effective doses of drug cannot be delivered to the primary site and invasive perimeter of the tumor due to the blood brain barrier. The Signature Center Initiative to Cure GBM is a funding mechanism that supports a research portal to foster investigations of the Brain Tumor Working Group for development of effective treatments for the eradication of GBM. The overall mission of the Signature Center Initiative is to:

1. Interrogate the molecular mechanisms of GBM biology and develop interventions that result in improved duration and quality of life for our patients.
2. Stimulate consistent and productive exchange of ideas between clinicians and basic scientists while employing bench-to-bedside and bedside-to-bench strategies to generate and prioritize scientific questions.
3. Provide infrastructure and mentorship needed to successfully compete for external funding.
4. Engage the community through patient advocacy to positively impact brain cancer patient outcomes and enhance philanthropic initiatives.

The Brain Tumor Working Group brings together scientists committed to engaging in a team-based approach to study GBM biology. Infrastructure required to advance in vivo humanized intracranial tumor models, drug delivery, target validation, and development of new therapeutic strategies are in place. Additionally a patient sample pipeline to obtain, analyze, and distribute primary patient GBM specimens from the operating room to the research laboratory has been established. In year one of funding, over $70,000 in pilot project funding derived from the Signature Center Initiative and private donations has been distributed to the membership. The Brain Tumor Working Group meets in both small and large group formats to strategize experimental design and grant submissions. A network of basic scientists and clinicians has been developed that provides an effective forum for addressing clinically relevant questions related to GBM. A team-based approach, scientific expertise, and continued development of infrastructure provide our membership with a critical foundation to obtain new knowledge related to understanding how GBM cells evade therapy. In the future, this information can be applied to development of effective treatments that will cure GBM.